

Introduction

In football, experts are expected to make better use of peripheral vision to simultaneously monitor a number of players (Davids, 1984, Williams & Davids, 1998). However, there is no study so far, in which the relevance of peripheral vision was investigated in complex football game situations. Consequently, a mixed-methods field study in football with 3 vs. 3 football situations that demand processing peripheral information was created and football players with different levels of expertise were tested in terms of decision-making and interviewed about their perceptual strategies.

Methods

By use of a mixed-methods approach, 10 high-skilled and 10 low-skilled players were tested in 32 different game play scenarios. The participants played the position of the central defender in 3 vs. 3 situations and were instructed to prevent the attacking team from scoring a goal. Peripheral-processing demands were manipulated, for example, in 1 vs. 1 or give and go situations with relevant events off the ball where the run of another attacker must be detected for correct decisions. In order to measure the participant's use of peripheral information, the participants were equipped with a GoPro head camera that allowed analysing the number of players in their field of view 0.5s before the manipulated event. An additional scene camera, which was located at 3.5m height behind the goal, was used to examine the percentage of correct action responses. In addition, after every second situation interviews were conducted to assess underlying perceptual strategies. As dependent variables, response accuracies and the number of players in the field of view were analysed with independent t-tests.

Results

High-skilled players outperformed the low-skilled players in decision-making with 83.5 % ($SD = 13.88$) correct responses compared to 55.5 % ($SD = 7.21$) correct responses, $t(1,18) = 5.66$, $p < .01$, $d = 2.53$. For the number of players in the field of view, no significant differences were found between the two skill groups, $t(1,18) = 0.78$, $p = .44$, $d = 0.38$.

Discussion

The results show, that high-skilled players outperform low-skilled players in game situations that require the use of peripheral vision. However, since groups did not differ concerning the number of players in their visual field, these differences might be explained by attention rather than gaze differences. The analyses of the interviews revealed that this process might be supported by optimal positioning as evidenced by statements like "I tried to have all relevant players in my visual field" or "I positioned myself in a way that allowed me to perceive actions of other players". In future research, eye-tracking will be used to directly examine the location of gaze and to analyse the dynamics of information processing.

References

- Davids, K. (1984). The role of peripheral vision in ball games: Some theoretical and practical notions. *Physical Education Review*, 7(1), 26-40.
- Williams, A. M., & Davids, K. (1998). Visual search strategy, selective attention, and expertise in soccer. *Research Quarterly for Exercise and Sport*, 69, 111–128.